

REDUCING STOCKOUT RISKS FOR HEALTH PRODUCTS

Ideas from work in developing countries

Prashant Yadav

National Academy of Sciences Workshop

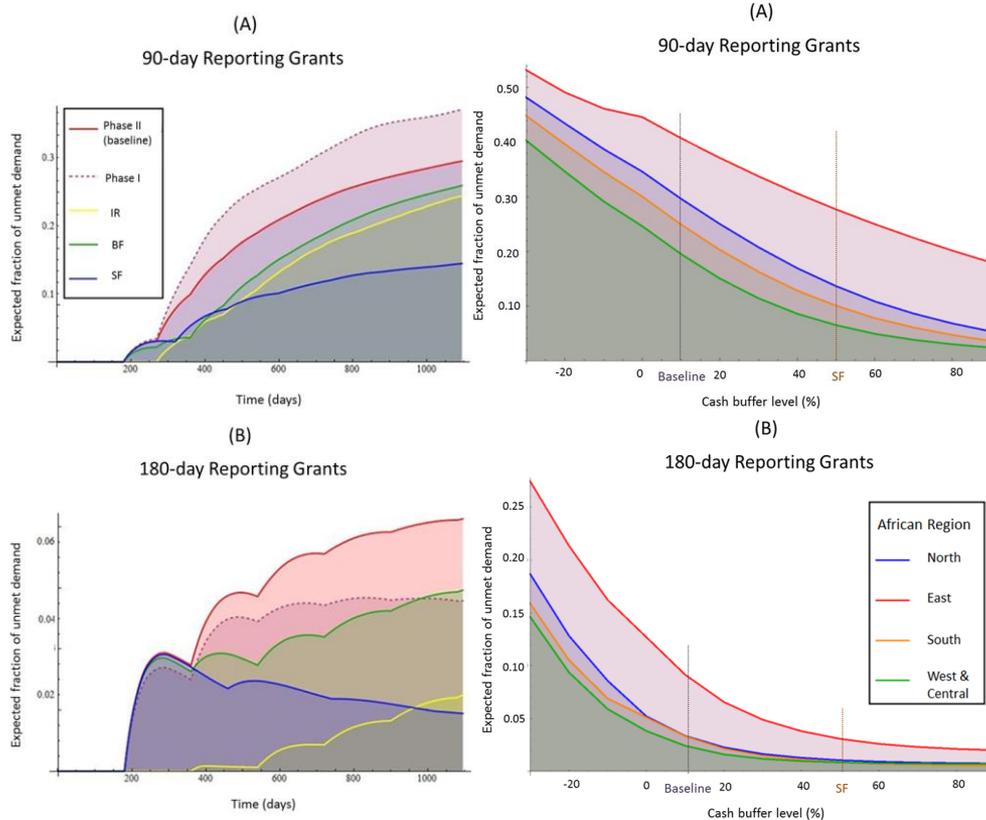
on

Medical Product Shortages during Disasters: Opportunities to Predict, Prevent, and Respond

September 5-6, 2018

Washington, DC

SYNCHRONIZED FINANCING AMONG BEST LEVERS FOR REDUCING NATIONAL STOCKOUT RISKS



Significant national stockouts observed in Global Fund programs from 2002 to 2013

Complex funds flow architecture and decision making process

Gallien, Rashkova, Atun & Yadav (2017) :

- Econometric analyses of historical *disbursement interarrival times* (DITs) and *procurement lead times* (PLTs)
- discrete-event model to simulate inventory level/stockout risks based on validated distributional forecasts of DITs and
- An out-of-sample validation of the model's predictions against the stockout levels
- Use this model to generate insights about potential interventions to reduce stockout risk

Synchronized Financing is the most significant lever in reducing national stockout risk

Gallien, J. , Rashkova, I. , Atun, R. and Yadav, P. (2017), National Drug Stockout Risks and the Global Fund Disbursement Process for Procurement. *Production & Operations Management*, 26: 997-1014.

LIQUIDITY GAP AND FUNDS FLOW VELOCITY OFTEN THE BOTTLENECK

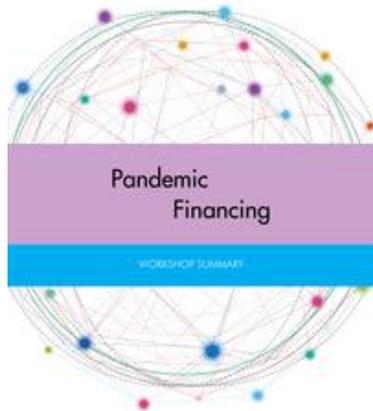


Responding to pandemics: new ways of raising finance, and fast

May 19, 2016

Prashant Yadav & Akash Goel

GLOBAL HEALTH RISK FRAMEWORK



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Slow funds disbursement velocity is key hurdle for managing response.

When a disaster strikes, governments in the region face a liquidity gap.

Liquidity gap leads to sub-optimal allocation of resources. Reduced investment in activities that could potentially reduce medical product shortages.

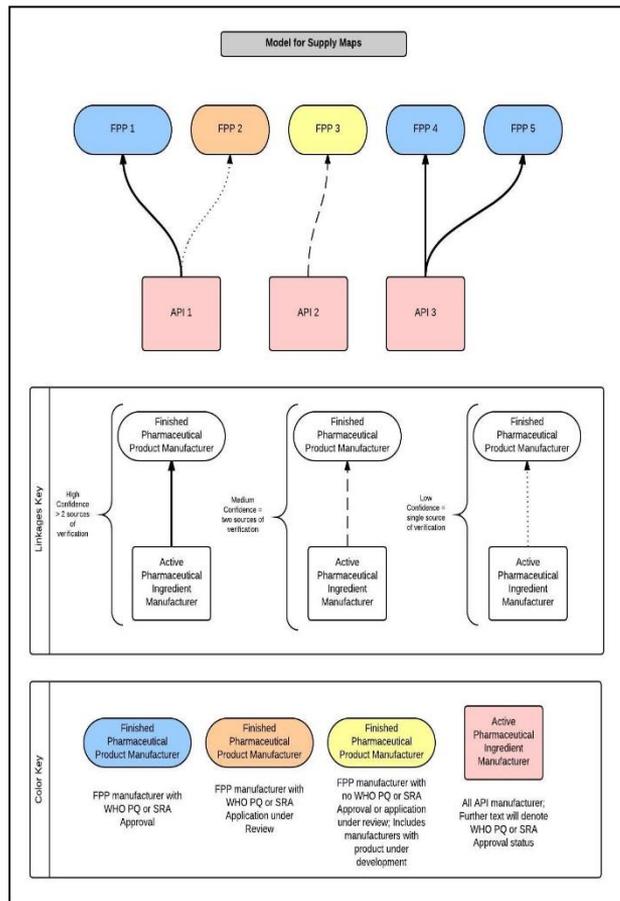
Insurance and Financial Innovation can resolve some of the liquidity challenges

- Many types of ILS and Catastrophe-bonds
- The Caribbean Catastrophe Risk Insurance Facility (CCRIF) a multi-country parametric sovereign risk insurance program
- The African Risk Capacity (ARC) Africa's sovereign catastrophe insurance pool for climate and weather risk transfer and insurance.
- World Bank Pandemic Emergency Finance Facility

Another Idea: Sovereign lending and FDI incentives linked to investments in health system preparedness

Need for stronger collaboration with such programs to ensure that the increased liquidity also allows quicker responses to medical product shortages and associated risks

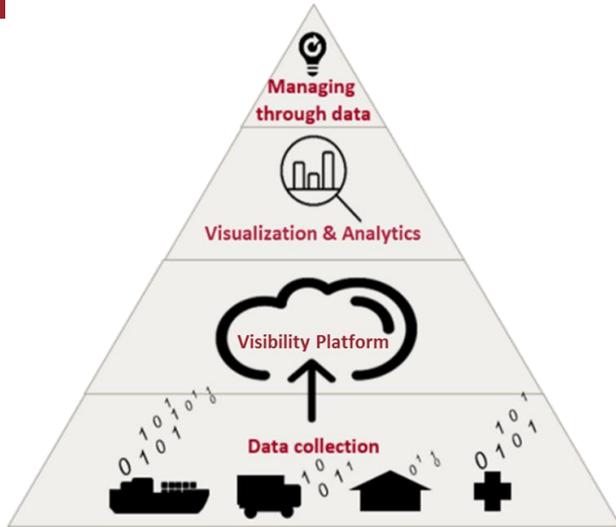
MAPPING UPSTREAM SUPPLY CHAIN PROVIDES LEVERS TO REDUCE GLOBAL SHORTAGES



- Most global agencies primarily focused on understanding reasons for shortages in the finished product market.
- Often more significant challenges occur upstream, involving the active pharmaceutical ingredients (APIs)
- Lack of reliable information about API market structure and supply capacity contributes to supply shortages
- Multi-year API market understanding project supported by UNITAID
- Facilitated understanding of market structure and supply capacity deficiencies that created risks of global shortages or other market inefficiencies
- Design of interventions to increase resilience in the system based on robust understanding of supply structure and capacity

Source: UNITAID API MDIS Project Report, 2014

SUPPLY CHAIN VISIBILITY & COLLABORATIVE PLANNING FOR REDUCING STOCKOUT RISKS



- Large number of stakeholders: financiers, suppliers, country purchasers, supply chain service providers
- Different forecasts and opinions about demand
- National SC managers have limited in-bound visibility
- Suppliers have limited visibility into order pipeline and demand

A Visibility & Analytics Network (VAN)

- brings together people, policy, process & technology for a collaborative and demand-driven supply chain planning process
- pulls together data from multiple sources into a logical format to guide and support the best decisions

- National supply chain managers get full in-bound visibility
- Financiers obtain a coordinated view to support collaborative planning
- Manufacturers have information to plan better